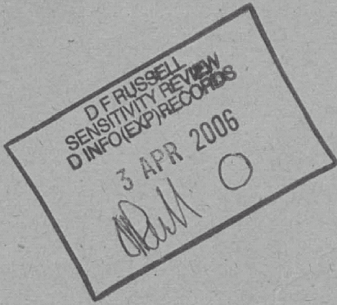


JAPAN



WO 189/4875

WO 189/4875

Phys

H.Q. C.D.E.S. PORTON

25 MAY 1944

SECRET.

Z.3079.

C H E M I C A L B O A R D

I N F O R M A L C O N F E R E N C E O F C H A I R M E N

In his report on his discussions in America which was considered at the 87th Informal Conference of Chairmen of Sub-Committees of the Chemical Board, (Notes Y.19815), Major General Goldney suggested that it might be worth while attempting to assess the probable effects of a C.W. bombing attack on Tokyo.

Particulars of the population and layout and photographs of typical buildings and areas in Tokyo were kindly provided by the Director of Military Intelligence, War Office and these have now been studied by Professor Brunt. He has submitted the attached memorandum (Z.3079A) on the subject.

This memorandum will be considered at the next Informal Conference of Chairmen of Sub-Committees of the Chemical Board which is to be held at Sutton Oak at 10 a.m. on Wednesday, 7th June, 1944.

E.E. HADDON,

Secretary.

22nd May, 1944.
Ministry of Supply,
Savoy Hill House, W.C.2.
Temple Bar 4411/Ext.36 or 39.
EEH/PE.

P.T.O.



Copies to:-

C.C.D.D.
Professor Andrade.
Captain Sayer, R.N.
Professor Brunt.
Professor Douglas.
Sir Harold Hartley.
Professor Heilbron.
Professor Hinshelwood.
Professor Sir Robert Robinson.
Professor H.W. Melville.
Professor R.A. Peters.
M.A./D.G.X.
R.A.F.A./D.G.X.
D.S.W.V. }
D.D.S.W. } War Office.
S.W.V.2. }
D.D.R.D.Arm.(C) (Mr. Rambaut)
A.D.Arm.R.(C.W.), Air Ministry,
(Wing Commander Parker).
A.S.P.2 (Wing Comdr. Peveler).

Dir. Of Path., War Office
(Major General Poole).
Dr. E.F. Armstrong.
Major Tarr.
Lt.Col. Sawyer.
Colonel W.M. Scott.
A.1. (Colonel Duncan).
P.T.A./C.C.D.D.
P.A./C.C.D.D.
C.D.R.1.
C.D.R.2.
C.D.R.3.
Chief Superintendent, Porton (9 copies)
T.R.S., Porton (3 copies)
P.A. (2)
Chairmen's File (C.D.R.1).
Superintendent, Sutton Oak.
C.D./Liaison (17 copies)
3 Spares.

SHH/3150.

ATTACK ON TOKYO WITH GAS BOMBS1. Climatic Considerations.

The climatic conditions over Japan and the China Coast are described in C.D. Report No.1103. Briefly, the climate of Tokyo can be described thus:-

The winter is on the average cold, and may be so cold that the danger from mustard gas would be negligible. Temperatures as low as 17°F. have been recorded in January. The winds are mainly N. to NW.

The summer is warm and damp. During the months June-September inclusive the daily maximum averages 76°F. or more, while the monthly mean night minimum is 63°F. or more, with average relative humidity exceeding 80%. Rain falls on about half the days of each of these months, the total monthly rainfall averaging 5.5 ins. in July, and 8.9 ins. in September. About 50% of the winds are S. to S.E., and 30% N. to E. The high temperature and humidity of the summer months would appear to favour the use of mustard, but in these months the heavy rainfall would tend to act as a decontaminant, and persistent danger from mustard would only be achievable in the intervals between the summer rains. It is not possible to assess with certainty the accuracy with which such intervals could be predicted, but there does not appear to be any likelihood that this would be difficult.

The winter is the driest season of the year, the monthly rainfall amounting to 2.2 - 2.6 ins. Spring and autumn are both rather wet, nearly one day in two having some rainfall, the total monthly rainfall averaging 4.4 ins. in March, and higher in the other months of spring and autumn. The transitional months of spring and autumn bring occasional very warm days, a maximum of temperature of 90°F. having been recorded in October, and 83° and 85° having been recorded in April and May respectively.

Conditions at all times of the year may favour the use of non-persistent gases, and the high degree of cloudiness shown by the average figures would favour relatively long travel of the gas-cloud, by keeping the lapse-rate low. The greatest danger from mustard would be achieved in the intervals between the summer rains.

2. Flow of Gas in the Streets of Tokyo.

The statistical data, and the file of pictures supplied for my examination (from D.M.I., War Office), do not suffice to enable us to form a complete picture of the structure of modern Tokyo. The appearance of different parts of the city is highly diversified. A photograph taken from near the mouth of the River Sumida, looking up the river, shows an extensive area densely covered by buildings of a varied character, most of them of the Japanese type, and therefore highly inflammable. There is an area of about three square miles, covering (a) the area north and east of the central Palace district as far as the rivers Sumida and Kandagawa, including the wards of Kanda, Nihombashi and Kyobashi, (b) the wards of Honjo and Fukagawa east of the Sumida, and (c) the ward of Ushigome N.W. of the Palace district, to west of the north-south sweep of the Kandagawa river, - which is all very densely populated, having population density exceeding 100,000 per square mile. A large proportion of the buildings in this area are Japanese type, largely constructed of wood, sometimes faced with stone or brick walls, giving an outward appearance resembling European buildings. Other parts of Tokyo are probably of the same character.

There are, on the other hand, parts of Tokyo in which the streets are wide, with European style buildings, while the Government and municipal buildings are usually of European type, and are surrounded, in most cases, by considerable open spaces.

From the point of view of attack by gas, the two types of areas must be sharply distinguished. In the densely built areas of Japanese type buildings, where the streets are narrow, the flow of a gas cloud would be hindered by the narrowness of the streets. In the areas which resemble European cities, with wide streets and substantial buildings, the use of gas, whether persistent or non-persistent, would offer precisely the same problems as in European cities. If it were proposed to use gas in any form against the very thickly built-up area covered by Japanese type buildings, it would be advisable to use very large numbers of small bombs, while over the remaining area the scheme already laid down for attack on European cities could be applied.

The aspect of the attack on Tokyo which differs from that on any European city is the mode of attack to be used on the densely populated area previously mentioned. There are at least three alternatives, involving the use of phosgene, mustard, and incendiaries, respectively. Phosgene used in smaller bombs than have been hitherto considered for attack on cities, (possibly a 50 lb. bomb would be required) would undoubtedly produce casualties in considerable numbers, as would mustard sown thickly over the area, especially during intervals in the summer rains. If mustard were used, and it produced the effect of driving the population away from the densely built areas, attack with incendiaries should follow a few days later.

There appears to be no doubt that most of the Japanese type buildings in Tokyo are highly inflammable. It is therefore recommended that the initial attack on Tokyo should be made against the areas of densely packed Japanese buildings using incendiaries on a scale sufficient to set the large areas involved, on fire. When the inflammable buildings had been eliminated, attack on the modern type streets could be made with persistent or non-persistent gas much as against any European city, on the scale already laid down for the latter.

(Sgd.) D. BRUNT.

8th May, 1944.

SHH/3150.